

Facility: <u>Palo Verde</u> Examination Level: <b>SRO</b>		Date of Examination: <u>7/23/07</u> Operating Test Number: <b>PVNGS SRO</b>	
Administrative Topic (see Note)	Type Code*	Describe activity to be performed:	K/A # IMP
Conduct of Operations	C, D	Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data. (Candidate will be required to review an Operations repetitive task) <i>Scheduled as Admin JPM SA-1.</i>	2.1.25 3.1
Conduct of Operations	C, D, P	Ability to locate and use procedures and directives related to shift staffing and activities. (Candidate will be required to determine that an operator is not able to stand watch and that he/she will need a working hour limit deviation form to permit exceeding his normal working hour restrictions) <i>Scheduled as Admin JPM SA-2.</i>	2.1.5 3.4
Equipment Control	C, N	Knowledge of surveillance procedures. (Review a Surveillance Test and determine three errors) <i>Schedule as Admin JPM SA-3. (NEW)</i>	2.2.12 3.4
Radiation Control	C, N	Verify administrative and radiological entry requirements per the RWP (Candidate will be required to identify the proper REP, task, and dose settings/limits for the particular job assignment.) <i>Scheduled as Admin JPM SA-4. (NEW)</i>	2.3.1 3.0
Emergency Plan	S, D	Ability to take action called for in the Emergency Plan, including acting as Emergency Coordinator. (Candidate will classify event and perform initial Emergency Coordinator duties.) <i>Scheduled as Admin JPM SA-5.</i>	2.4.38 4.0

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

\*Type Codes & Criteria: (C)ontrol room

(D)irect from bank (≤ 3 for ROs: ≤ 4 for SROs & RO retakes)

(N)ew or (M)odified from bank (≥ 1)

(P)revious 2 exams (≤ 1; randomly selected)

(S)imulator

Facility: <u><b>Palo Verde</b></u> Examination Level: <b>RO</b>		Date of Examination: <u><b>7/23/07</b></u> Operating Test Number: <u><b>PVNGS RO</b></u>	
<b>Administrative Topic (see Note)</b>	<b>Type Code*</b>	<b>Describe activity to be performed:</b>	<b>K/A # IMP</b>
Conduct of Operations	C, D	Ability to execute procedure steps. (Candidate will be required to calculate RCS dilution using procedures and given plant parameters) <i>Scheduled as Admin Task RA-1.</i>	2.1.20 4.3
Conduct of Operations	C, N	Ability to make accurate, clear and concise logs, records, status boards, and reports. (Using a DG ST, fill out the DG Test Record) <i>Scheduled as Admin Task RA-2. (NEW)</i>	2.1.18 2.9
Equipment Control	C, D, P	Knowledge of tagging and clearance procedures. (Identify boundaries and generate a permit) <i>Scheduled as Admin JPM RA-3.</i>	2.2.13 3.6
Radiation Control	C, N	Verify administrative and radiological entry requirements per the RWP (Candidate will be required to identify the proper REP, task, and dose settings/limits for the particular job assignment.) <i>Scheduled as Admin JPM RA-4. (NEW)</i>	2.3.1 2.6

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

\*Type Codes & Criteria: (C)ontrol room  
 (D)irect from bank (≤ 3 for ROs: ≤ 4 for SROs & RO retakes)  
 (N)ew or (M)odified from bank (≥ 1)  
 (P)revious 2 exams (≤ 1; randomly selected)  
 (S)imulator

Facility: <u>PVNGS</u>	Date of Examination: <u>7/23/07</u>
Exam Level: <u>SRO</u>	Operating Test No.: <u>SRO-U</u>

**Control Room Systems<sup>@</sup> (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)**

JPM #	System/JPM Title	Type Code*	Safety Function
JS1	Align AFA for operation (AF001)	S A D 3.4-061-A3.03      3.9/3.9	4 (Secondary)
JS2	Energize Switchyard loads from GTGs (NEW)	S N 3.6-062-A4.01      3.3/3.1	6
JS3	Remove CS B from SDC (SI005)	S D L 3.4-005-A4.01      3.6/3.4	4 (Primary)

**In-Plant Systems<sup>@</sup> (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)**

JP1	Restore DG B to PBB-S04 (Modified)	A E M 4.1-055-EA1.02      4.3/4.4 4.1-055-EA1.06      4.1/4.5	6
JP2	Restore local air to the SFP gate seals and place the Nitrogen bottles on standby	E D P R 3.8-078-A3.01      3.1/3.2	8

<sup>@</sup> All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: <b><u>PVNGS</u></b>	Date of Examination: <b><u>7/23/07</u></b>
Exam Level: <b><u>SRO</u></b>	Operating Test No.: <b><u>SRO-I</u></b>

**Control Room Systems<sup>@</sup> (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)**

JPM #	System/JPM Title	Type Code*	Safety Function
JS1	Align AFA for operation (AF001)	S A D 3.4-061-A3.03 3.9/3.9	4 (Secondary)
JS2	Energize Switchyard loads from GTGs (NEW)	S N 3.6-062-A4.01 3.3/3.1	6
JS3	Remove CS B from SDC (SI005)	S D L 3.4-005-A4.01 3.6/3.4	4 (Primary)
JS4	Perform actions for extended loss of Letdown (AO019)	S A D 3.2-004-A2.07 3.4/3.7	2
JS5	Adjust Power Signal Calibrations (NEW)	S N 3.7-015-A4.02 3.9/3.9	7
JS6	Borate the RCS 75 gallons (2005 Exam, JS5)	S A D P 3.1-004-A4.01 3.8/3.9	1
JS7	Place Containment Access Purge in service (CP002)	S D 3.8-029-A2.03 2.7/3.1	8

**In-Plant Systems<sup>@</sup> (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)**

JP1	Restore DG B to PBB-S04 (Modified)	A E M 4.1-055-EA1.02 4.3/4.4 4.1-055-EA1.06 4.1/4.5	6
JP2	Restore local air to the SFP gate seals and place the Nitrogen bottles on standby	E D P R 3.8-078-A3.01 3.1/3.2	8
JP3	Place standby Letdown Control Valve in Service (EO038)	D E R 3.2-004-A4.06 3.6/3.1	2

@ All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: PVNGS Scenario No.: 1 Op-Test No.: 2007

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: IC #20, 100% power, MOC.

Turnover: Unit 1 has been at 100% power for the past 103 days. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days. Train B is protected equipment. Normal Shiftly Surveillances are complete. Risk Management Action Level is Orange.

Event No.	Malf. No.	Event Type*	Event Description
1	cmDPMC03ARNP01B_6	C CO/SRO	After the crew performs the beginning of shift reactivity brief, Air Removal Pump B will trip. AR pump D will not start automatically. The alarm response will direct starting AR pump D and opening the suction valve to the B condenser shell
2	mfSI03D	C RO/SRO (TS)	SIT 1B low pressure alarms due to a leaking vent valve. SIT is repressurized using the operating procedure. CRS consults LCO 3.5.1.
3	mFRP06H1	C RO/SRO (TS)	An inadvertent CSAS on Train B occurs. This is a half leg trip starting pumps but not spraying containment. The crew enters <b>40AO-9ZZ17</b> , Inadvertent PPS-ESFAS Actuations to stop equipment. CRS should address Tech Spec LCOs 3.5.3 and 3.6.6.
4	mfAN_1A16B3 f:Alarm_ON	N CO/RO/SRO	After the CRS has addressed Tech Specs, the Control Room will get a Main Transformer Trouble alarm. The AO, using the local alarm response will report a C phase high winding temperature of 130 C, and that the alarm response directs to unload the transformer as necessary to clear the alarm. The crew should commence a down power.
5	mfEG02 cmTRMS02SGNPT1027_1	I- CO M- ALL	Once the down power has commenced, the turbine will trip. A pressure transmitter (SGNPT1027) will fail causing SBCS to close all valves after the initial quick open response. As a result, the reactor will trip on high pressure. The crew will perform SPTAs. The CO will take contingency actions for heat removal with either ADVs or SBCS in manual. Critical Task – Establish secondary heat removal
6	mfMS01D  NoMSIS	C-CO M- ALL	An ESD to Containment caused by the severe secondary pressure transient starts shortly after reactor trip and worsens over the next 10 minutes. As Containment pressure exceeds 3 psig, MSIS fails to actuate requiring manual initiation by the crew. Critical Task – Stabilize secondary heat removal to avoid lifting Pressurizer safeties Critical Task – Initiate MSIS

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: <u>PVNGS</u>		Scenario No.: <u>1 (continued)</u>		Op-Test No.: <u>2007</u>	
7	cmMVRH06SIBUV671_6 cmCPRH02SIAP03_6	C RO/SRO	Containment pressure will exceed 8.5 psig, causing a CSAS, but SIBHV671 will be mechanically seized and the A CS pump will trip. The CRS should enter the FRP and crosstie the A LPSI pump to the A CS header.  Critical Task – Establish Containment Spray flow		
End point			CS flow has been established and the faulted SG is isolated or when deemed appropriate by the Lead Examiner.		

## Supplemental Turnover

### **Plant conditions:**

Unit 1 has been at 100% power for the past 103 days. MOC 250 EFPD. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days.

Fuel Pool Cleanup is not on the Spent Fuel Pool.

### **Equipment out of service:**

AFA-P01 is inoperable for governor work. LCO 3.7.5 action B entered 12 hours ago.

TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days.

Risk Management Action Level is Orange.

### **Planned shift activities:**

Normal, shiftly surveillance's are complete.

No other activities are planned.

### **Note:**

The crew will walk down the control boards and assume the shift and then perform a reactivity brief prior to the commencement of the evaluation.

Facility: PVNGS Scenario No.: 2 Op-Test No.: 2007

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
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Initial Conditions: IC #20, 100% power, MOC.

Turnover: Unit 1 has been at 100% power for the past 200 days. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days. Train B is protected equipment. Normal Shiftly Surveillances are complete. Risk Management Action Level is Orange.

Event No.	Malf. No.	Event Type*	Event Description
1	cmTRMS03MTNPT11A _1	I CO/SRO	The crew takes the shift and performs shiftly reactivity brief. TLI channel 1 fails high. Crew enters <b>40AO-9ZZ16</b> , RRS Malfunctions and selects the unaffected channel.
2	cmCPCH03HCNA02A_6 cmCPCH03HCNA02C_6	C CO/SRO	After TLI 2 is selected, CEDM fans A and C trip. The Standby ACU will not auto start. The crew will start the standby fans by using either the alarm response or <b>40AO-9ZZ20</b> , Loss of HVAC abnormal operating procedure.
3	mfRP06I1	C RO/SRO (TS)	Once the CEDM fans are started, an inadvertent RAS occurs on A train. The crew enters <b>40AO-9ZZ17</b> and overrides actuated equipment.
4	mfRD02D	R CO/RO/SRO (TS)	CEA 17 slips into the core to 135" withdrawn. Crew enters <b>40AO-9ZZ11</b> . Crew begins a 20% downpower.
5	mfRD02N	M – ALL C-RO	CEA 52 drops into the core. The crew will recognize that a second CEA is deviating, requiring a reactor trip. Critical Task – Trip the reactor when two rods are deviating more than 9.9 inches from their subgroup.
6	mfTH01B  NoGenTrip	C-RO  C CO/SRO	After the reactor trip a leak develops in the RCS. RO takes contingency actions for Pressurizer level control  Generator output breakers do not open requiring the CO to perform a contingency action. This will result in losing 13.8 kv non-class power.
7	mfTH01A	M – ALL	When the CRS enters the LOCA procedure the leak degrades so that SIAS actuates and subcooling is lost.

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor



Facility: <u>PVNGS</u>		Scenario No.: <u>2 (continued)</u>		Op-Test No: <u>2007</u>	
8	mFSI01B cmCPSI01SIAP02_5	C RO/SRO	When SIAS is actuated, the B HPSI pump will trip. HPSI A will fail to start. Critical Task – Start HPSI A		
End point			When adequate HPSI flow has been established or as deemed appropriate by the Lead Examiner.		

## Supplemental Turnover

### **Plant conditions:**

Unit 1 has been at 100% power for the past 200 days. MOC 250 EFPD. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. Train B is protected equipment. Normal Shiftly Surveillances are complete. Risk Management Action Level is Orange.

Fuel Pool Cleanup Pump "A" (PCN-P02A) is not the Spent Fuel Pool.

### **Equipment out of service:**

AFA-P01 is inoperable for governor work. LCO 3.7.5 action B entered 12 hours ago.

TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days.

Risk Management Action Level is Orange.

### **Planned shift activities:**

Normal, shiftly surveillance's are complete.

No other activities are planned.

### **Note:**

The crew will walk down the control boards and assume the shift and then perform a reactivity brief prior to the commencement of the evaluation.

Facility: PVNGS Scenario No.: 3 Op-Test No.: 2007

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
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Initial Conditions: IC #16, 50% power, MOC.

Turnover: Unit 1 has been at 50% power after a RPCB when the B MFP tripped. ECC has directed holding at the current power level due to grid oscillations. The B MFP has been repaired and is in standby. Power ascension is expected to begin in 6 hours. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days. Train B is protected equipment. Normal Shiftly Surveillances are complete. Risk Management Action Level is Orange.

Event No.	Malf. No.	Event Type*	Event Description
1	cmTRCV19RCALT110X_1	I RO/SRO (TS)	The crew takes the shift and has the routine reactivity brief. Pressurizer level transmitter 110X fails low. RO selects the Y channel for level control and heater cutout. CRS refers to LCO 3.3.10 and 3.3.11
2	mfSW01B	C CO/SRO	Plant Cooling Water pump trips, the A pump fails to auto start. The crew starts the pump using either the alarm response or 40AO-9ZZ03, Loss of Cooling Water.
3	EG04	C CO/SRO	Main Generator AC Voltage Regulator fails. CO addresses alarm response and switches to DC control per the operating procedure.
4	crB5ED18PKBM4212	C RO/SRO (TS)	PBB-S04 trips on ground fault. Crew enters 40AO-9ZZ12, Degraded Electrical and 40AO-9ZZ05, Loss of Letdown. CRS refers to Tech Specs. The need for 41ST-1ZZ02 and 40ST-9EC03 is discussed.
5	cmBKED04NBNS01A_5	M- ALL	NBN-S01 deenergizes, leaving only one Condensate Pump. MFWP A will trip on low suction. Crew will trip the reactor.
6	mfRD03I	C RO/SRO	One control rod will stick out on the trip. The CRS will direct the RO to borate. Critical Task – borate the RCS greater than 40 gpm
7	mfED10A cmCPCC08SPAP01_5	C-RO	After the boration is started, NBN-X03 transformer will fault, deenergizing PBA-S03. The A Spray Pond pump will need to be started by the RO. Critical Task - Start A Spray Pond or Emergency Stop DG A w/in 15 minutes
8	cmMVFW01CDNHV1_6	C-CO C RO/SRO	A suction valve to AFN-P01 is stuck closed. CRS will diagnose Loss of All Feed. Success path is to restart a MFWP and feed the Steam Generators. RO will stop RCPs per LOAF procedure.  Critical Task- Establish feed to a SG
End Point			Establish feed to at least one SG or when deemed appropriate by Lead Examiner.

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

## Supplemental Turnover

### **Plant conditions:**

Unit 1 has been at 50% power after a RPCB when the B MFP tripped. ECC has directed holding at the current power level due to grid oscillations. The B MFP has been repaired and is in standby. Power ascension is expected to begin in 6 hours. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days. Train B is protected equipment. Normal Shiftly Surveillances are complete. Risk Management Action Level is Orange.

Fuel Pool Cleanup Pump "A" (PCN-P02A) is not the Spent Fuel Pool.

### **Equipment out of service:**

AFA-P01 is inoperable for governor work. LCO 3.7.5 action B entered 12 hours ago.

TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days.

Risk Management Action Level is Orange.

### **Planned shift activities:**

Normal, shiftly surveillance's are complete.

No other activities are planned.

### **Note:**

The crew will walk down the control boards and assume the shift and then perform a reactivity brief prior to the commencement of the evaluation.

Facility: PVNGS Scenario No.: 4 Op-Test No.: 2007

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
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Initial Conditions: IC #20, 100% power, MOC.

Turnover: Unit 1 has been at 100% power for the past 200 days. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days. Train B is protected equipment. Normal Shiftly Surveillances are complete. Risk Management Action Level is Orange.

Event No.	Malf. No.	Event Type*	Event Description
1	mfCV06A	C RO/SRO (TS)	The crew takes the shift and performs a reactivity brief. Charging Pump A trips. The crew responds by either starting Charging Pump E, lowering Letdown flow with Pressurizer Master Controller, or if Letdown isolates, entering <b>40AO-9ZZ05</b> , Loss of Letdown.
2	NI02D	I CO/SRO	Control Channel 2 fails to 50%. The crew should address the alarm response for the AMI received and respond IAW <b>40AO-9ZZ16</b> , RRS Malfunction. The RO should take CEDMCS out of Auto Sequential and the CO should select the unaffected channel on RRS panel and place CEDMCS back to Auto Sequential. The CO will then take Control Channel #2 FWCS input to maintenance and remove the ATUN lockout.
3	mfTH06B	C RO/CO/SRO (TS)	200 gpd SGTL starts on SG 2. Crew enters 40AO-9ZZ02, Excessive RCS Leakage. RO performs leak rate determination. CO performs minimize release to the environment. CRS determines plant shutdown is required.
4	mmf mfTH06B  cmCPCC07EWBP01_5  cmTRRX05RCNTT121X _1	M-ALL  C-RO  I-CO	A Steam Generator tube fails on SG 2, causing primary pressure to drop, tripping the unit.  EW B must be started manually.  Tave fails high causing an overfeed condition.  The CRS will diagnose Steam Generator Tube Rupture.  Critical Task - When primary pressure is below SIAS setpoint, trip two RCP's within 30 minutes.
5	cmRVMS02SGEPSV555 _2	C CO/SRO	A Safety Valve on SG2 Line 2 fails open. The crew must transition to the Functional Recovery Procedure.  Critical Task- Feed faulted and ruptured SG at 1360-1600 gpm.
End point			SG 2 being fed at 1360-1600 gpm or when deemed appropriate by the Lead Examiner.

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

## Supplemental Turnover

### **Plant conditions:**

Unit 1 has been at 100% power for the past 200 days. MOC 250 EFPD. AFA was tagged out 12 hours ago to replace the governor oil seal, expected to be returned to operable in 10 hours. TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days. Train B is protected equipment. Normal Shiftly Surveillances are complete. Risk Management Action Level is Orange.

Fuel Pool Cleanup Pump "A" (PCN-P02A) is not the Spent Fuel Pool.

### **Equipment out of service:**

AFA-P01 is inoperable for governor work. LCO 3.7.5 action B entered 12 hours ago.

TCW Pump A is tagged out for motor replacement. Estimated return to service is 3 days.

Risk Management Action Level is Orange.

### **Planned shift activities:**

Normal, shiftly surveillance's are complete.

No other activities are planned.

### **Note:**

The crew will walk down the control boards and assume the shift and then perform a reactivity brief prior to the commencement of the evaluation.